SEPTEMBER 1979
No. 9

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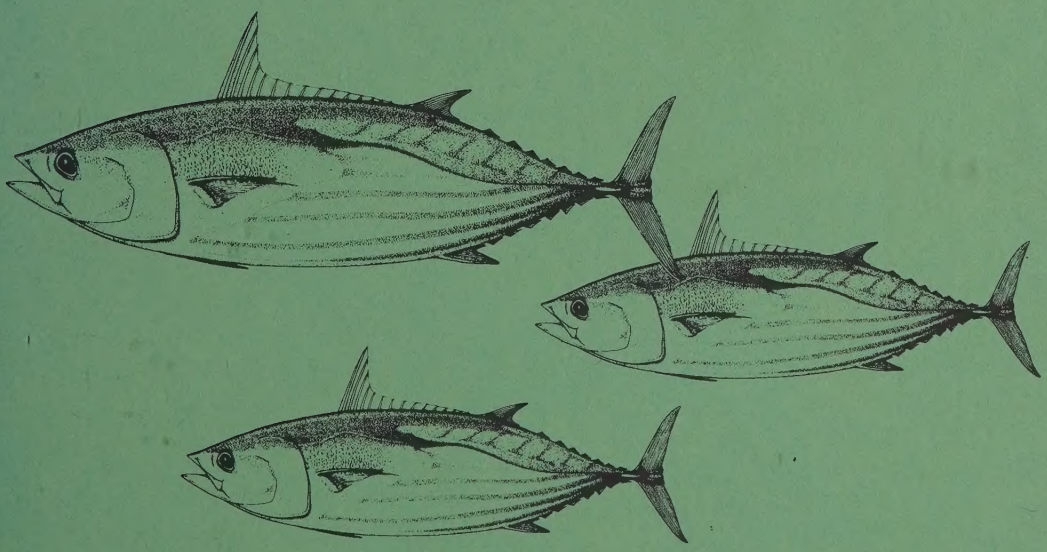

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FISHING INFORMATION

SEPTEMBER 1979, No. 9

EDITOR: JAMES A. RENNER

I. Barrett, Director, SOUTHWEST FISHERIES CENTER
J. Carr, Deputy Director

PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. It contains a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

To cancel delivery of this publication in the event you no longer need to receive it, or to change the delivery address if you are moving but still need to receive it, please notify us by writing: James A. Renner, Editor, Fishing Information, National Marine Fisheries Service, Southwest Fisheries Center, P.O. Box 271, La Jolla, California 92038.

Submitted for publication - October 29, 1979

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ENVIRONMENTAL CHARTS ANALYZED BY:

F. Miller (Figures 8 and 9)
J. Renner (Figures 1, 2, 3, 4, 5, 6, 7, and 15 day supplement)

TECHNICAL EDITOR:
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R. Allen, H. Orr

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National Weather Service, San Diego, California and Washington D. C.
National Ocean Survey, Pacific Marine Center, Seattle, Washington

Fisheries Research Board of Canada, Pacific Environment Institute, West Vancouver, British Columbia by L. F. Giovando from observations by:
J. Redhead at Langara Island Light; D. Geiger at Cape St. James Light;
L. Collins at Kains Island Light; M. V. Stewart at
Amphitrite Point Light

Scripps Institution of Oceanography, La Jolla, California

Expendable bathythermograph and salinity observations are made by the mates and engineers of the *Mauraili* of the Matson Navigation Co. The data are processed under supervision of D. R. McLain at the NMFS Pacific Environmental Group, Monterey, California, using computer facilities of the Fleet Numerical Weather Central, Monterey. The project is partially supported by the National Science Foundation and the Office of Naval Research.

Sea Surface Temperature and Environmental Conditions

Forrest R. Miller

Eastern North Pacific

During September the Aleutian low pressure system normally intensifies over western Alaska, and the subtropical high pressure system is normally centered near 37°N, 142°W (Figure 1). The most active storm tracks are usually between 45°N and 50°N where the strongest surface winds develop and ocean mixing is greatest. Sea surface temperatures (SST) normally increase over a large region extending out to 700 miles from the high pressure center.

During September 1979 the Aleutian low center was near 60°N, 155°W with central surface pressures 4 to 6 millibars below normal. The subtropical high pressure center was located south of its normal position near 35°N, 153°W, and surface pressures from the high center to the U.S. west coast were 2 to 4 millibars below normal. Ocean mixing was intensified by westerly surface winds which were 2 to 4 knots above normal along the north Pacific storm tracks between 40°N and 50°N. Most of the weather fronts intensified along the southern boundary of the Aleutian low, but storm centers continued to cross the west coast north of 50°N. Most weather frontal passages were weaker than normal across the U.S. coastal regions. As a result, coastal upwelling and wind mixing of the ocean surface were significantly less than normal over the coastal fishing grounds.

Along the west coast from Washington to southern California and westward to 150°W, there were no sharp horizontal SST fronts (Figure 3). Except for the offshore areas 350 miles west of the Columbia River (Cobb Seamount) and west of Morro Bay in central California, albacore tuna fishing was very poor. Through September 1979, the U.S. albacore fishing season was one of the poorest on record. Many fishermen considered the nonexistence of sharp temperature edges (ocean fronts) along the coasts during this summer was a contributing factor to the small albacore landings this year. SST's were more than 1°C above normal along most of the U.S. west coast (Figure 5) and 1 to 2°C greater than in September 1978 except near the Central California coast (Figure 7). West of 125°W, SST's were more than 1°C above normal over a large area south of the Aleutian Islands and in the Gulf of Alaska where the high pressure ridge with light winds frequently persisted east of 145°W. Another large area with SST's more than 1°C above normal developed south of 35°N as a result of the prolonged (3 months) domination of the subtropical high pressure system. However, in the areas covered by above normal SST's from 20°N to 35°N east of 150°W, the high pressure system was weaker than normal. From 35°N to 45°N and west of 145°W, SST's were more than 1°C below normal (Figure 5) principally because of the frequent development of storm centers along the periphery of the Aleutian low and the southwestward extension of weather fronts, heavy cloud cover and strong ocean wind mixing. The area of largest negative SST departures moved eastward approximately 10° of longitude from August to September. The patterns of negative and positive SST differences between September 1979 and 1978 were similar to the normal departure patterns north of 25°N.

Western North Pacific

During September the high pressure system was centered along 35°N and dominated the surface wind circulation south of 40°N. The Aleutian low pressure system shifted eastward

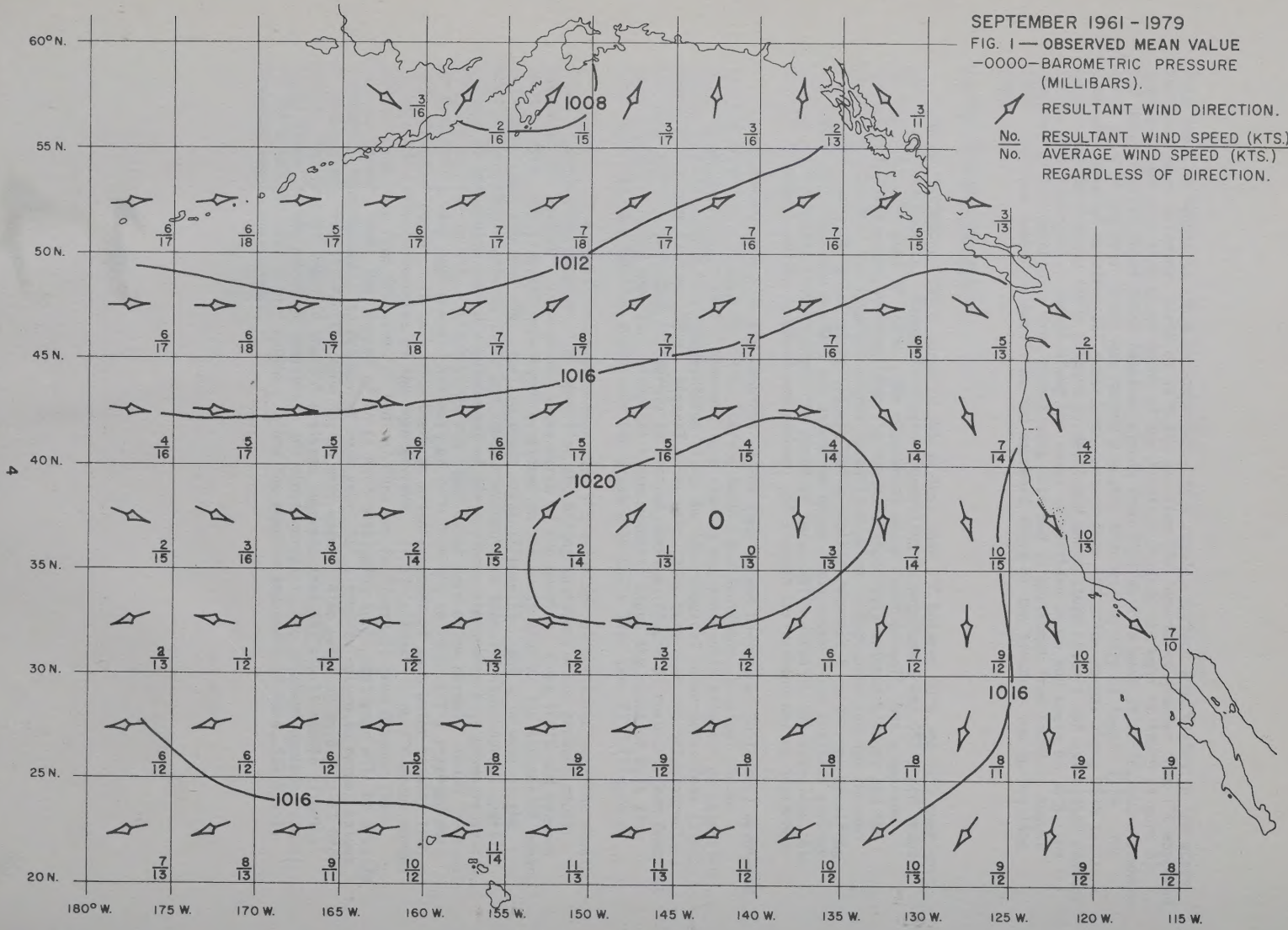
from 160°E in August to 155°W in September. As a result, surface wind mixing in the ocean surface layers decreased north of 40°N and positive SST departures greater than 1°C appeared over a larger area than usual south of the Aleutian Islands and west of 160°E (Figure 6). The north Pacific Ocean front remained strong from 41°N to 45°N west of 155°E, but elsewhere north of 40°N the ocean front was markedly weaker than during July or August 1979. The east-west band of negative SST departures greater than 1°C below normal along 35°N and in a north-south band along 160°E (Figure 6) developed where storm centers and associated weather fronts were strongest. Except along the coast of northern Japan and south of 30°N, the patterns of SST departures from normal were reversed in September from those in August 1979. This was caused primarily by the eastward shift of the Aleutian low during late summer.

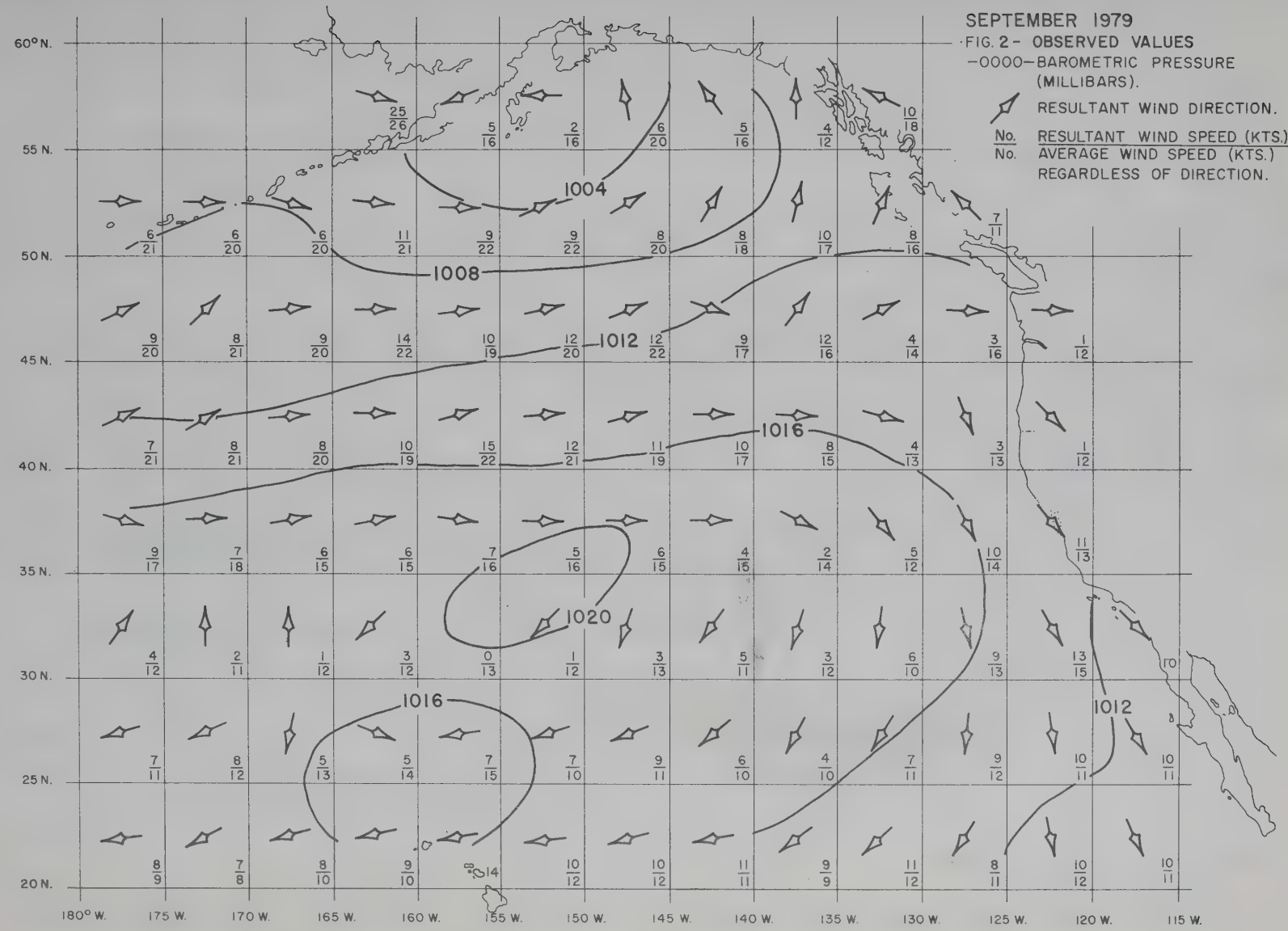
Eastern Tropical Pacific

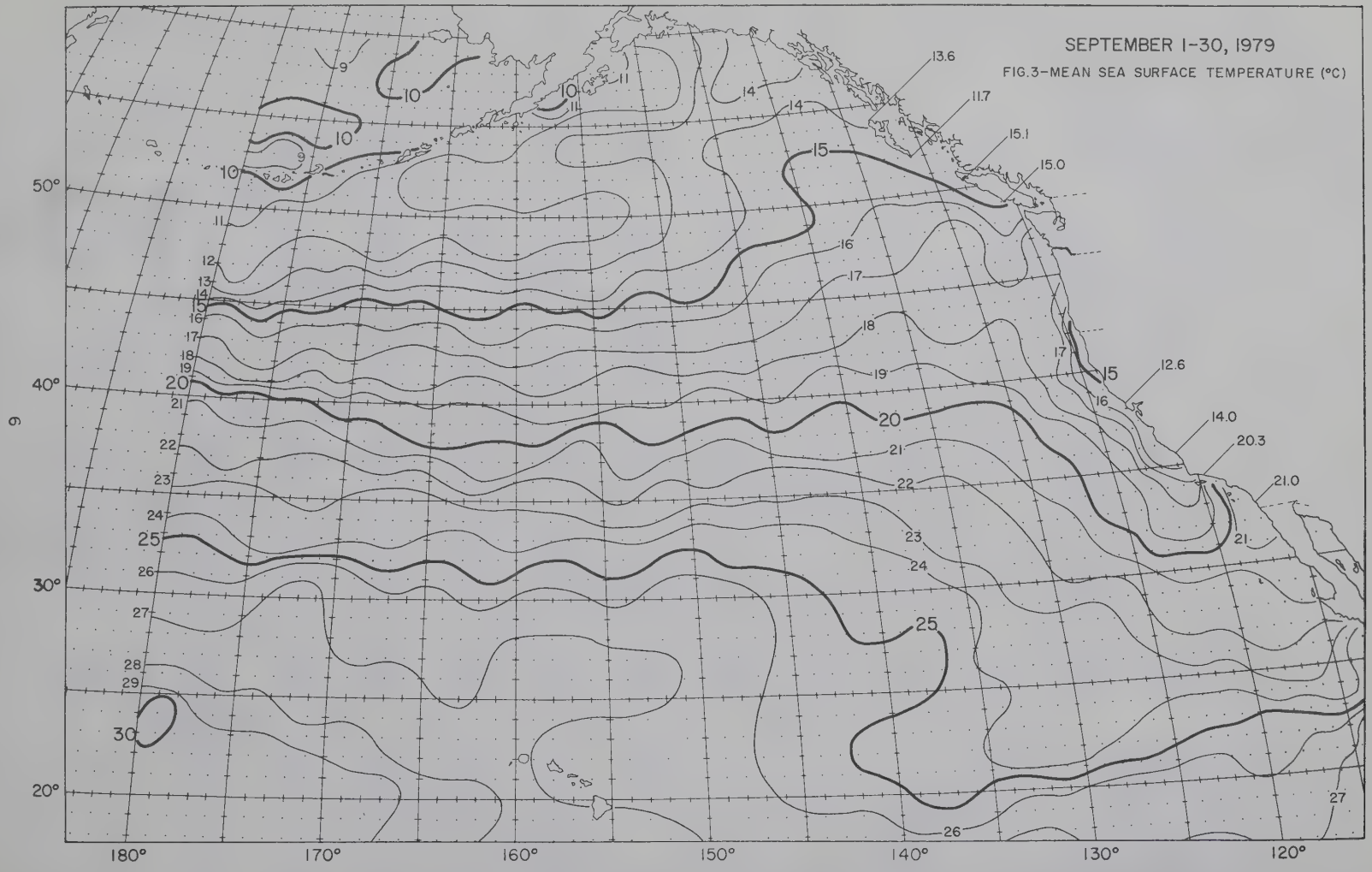
During September, SST's normally change less than 1°C between 30°N and 30°S over most of the eastern Pacific. Along the equator, upwelling is pronounced and SST's are reduced to less than 22°C east of 120°W. The equatorial ocean front normally has a maximum north-south temperature gradient near the equator, especially between Ecuador and the Galapagos Islands. Six tropical storms normally develop in September and two become hurricanes. Along tropical storm tracks, SST's usually decrease 2 to 4°C due to strong wind mixing of the ocean surface and extensive heavy cloud cover which inhibits surface heating. In the Peru Current along the coast of Peru, SST's normally decrease less than 0.5°C. Elsewhere in the southern hemisphere, SST's begin to increase during September.

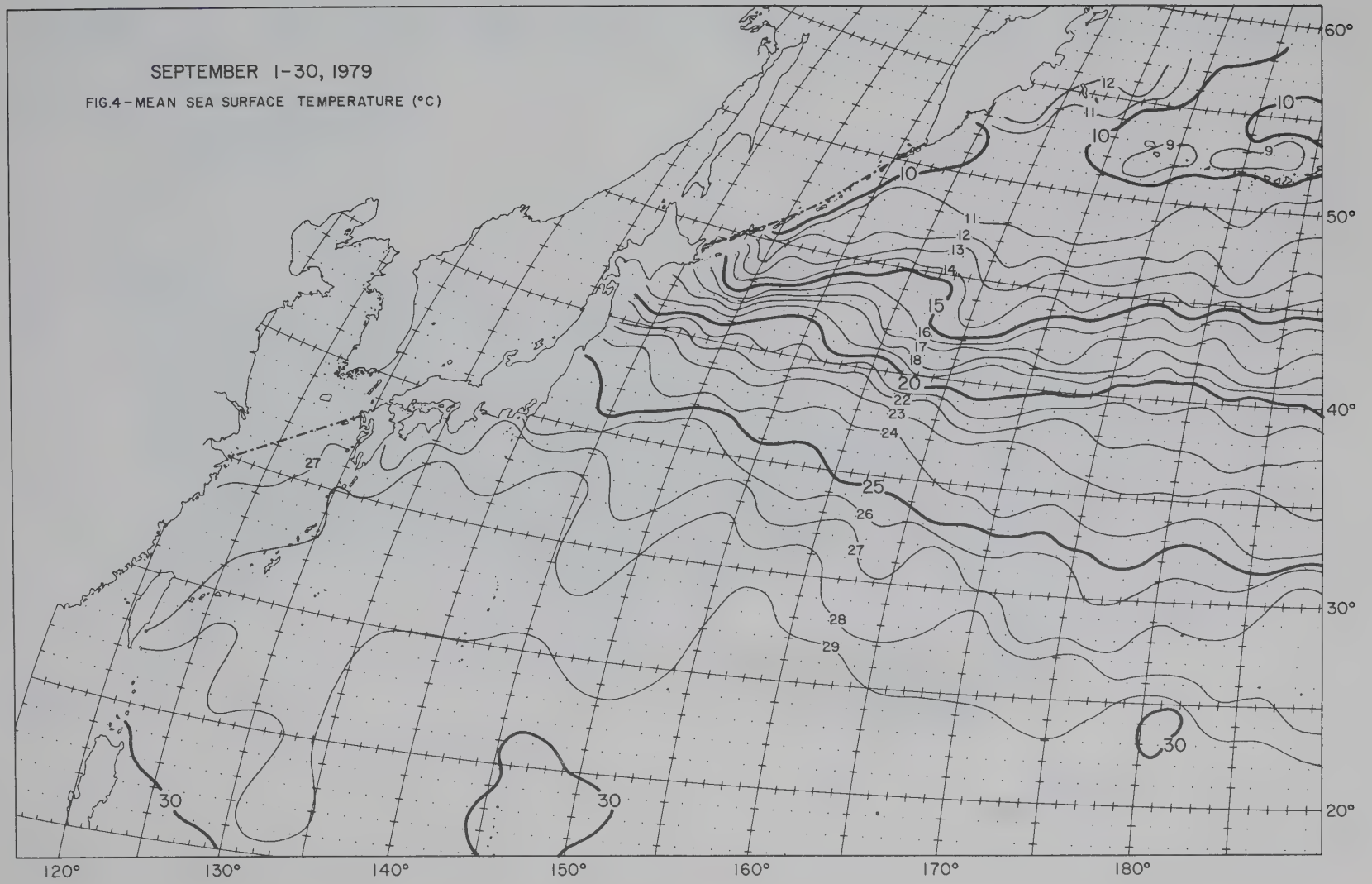
In September 1979 only two tropical storms (one became hurricane Guillermo) developed between 10°N and 15°N east of 110°W. During August and September, tropical storm development was below normal. However, tuna fishing was frequently affected by extensive areas of heavy squalls and thunderstorms along the Intertropical Convergence Zone (ITCZ) from 10°N to 17°N east of 110°W. Several areas with SST's more than 1°C below normal offshore from southern Baja California to Central America (Figure 9) resulted from frequent squall activity along the ITCZ. Tropical storm movement along the coast of Baja also contributed to the negative departures and areas with SST's less than 27°C (Figure 8).

Other areas with SST departures more than 1°C below normal persisted near the equator where a combination of equatorial upwelling and strong southeast winds brought cooler waters to the surface. In adjacent areas north of the equator, along 105°W and between 85°W to 95°W, positive SST departures developed on the north side of the equatorial ocean front which was stronger than usual in those areas (Figure 8). SST's in most of the southern hemisphere between 100°W and 140°W remained more than 1°C above normal, partly because of the southwestward displacement of the southern hemisphere high pressure system. From the equator to 7°S, surface winds and cloud cover were below normal. Along the coast of Peru SST's were near normal, but west of 78°W from 8°S to 13°S SST's remained more than 1°C above normal. In this area there is often a pocket of warm water between the inshore and offshore branches of the Peru Current. If SST's remain 1 to 2°C above normal over a large area near the coast of Central Peru (as in Figure 8) from October 1979 through January 1980, the chances of an El Niño developing early next year will be greatly enhanced. From September to October of each year, SST's tend to return to normal values in the eastern tropical Pacific even during very warm El Niño years or cold anti-El Niño years. The present trend in the SST analyses suggests that SST's will remain slightly below normal in the northern hemisphere and above normal in the southern hemisphere east of 120°W for the next 3 to 4 months. Along the equator and coast of Peru, SST's will probably remain near normal.


SEPTEMBER 1961 - 1979
FIG. 1 — OBSERVED MEAN VALUE
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1008
1012
1016
1020
1016
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


SEPTEMBER 1979
FIG. 2 - OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1020
1016
1012
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


SEPTEMBER 1-30, 1979
FIG.3-MEAN SEA SURFACE TEMPERATURE (°C)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
13.6
11.7
15.1
15.0
12.6
14.0
20.3
21.0


SEPTEMBER 1-30, 1979
FIG.4-MEAN SEA SURFACE TEMPERATURE (°C)
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°
12
11
10
9
10
9
10
11
12
13
14
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16
17
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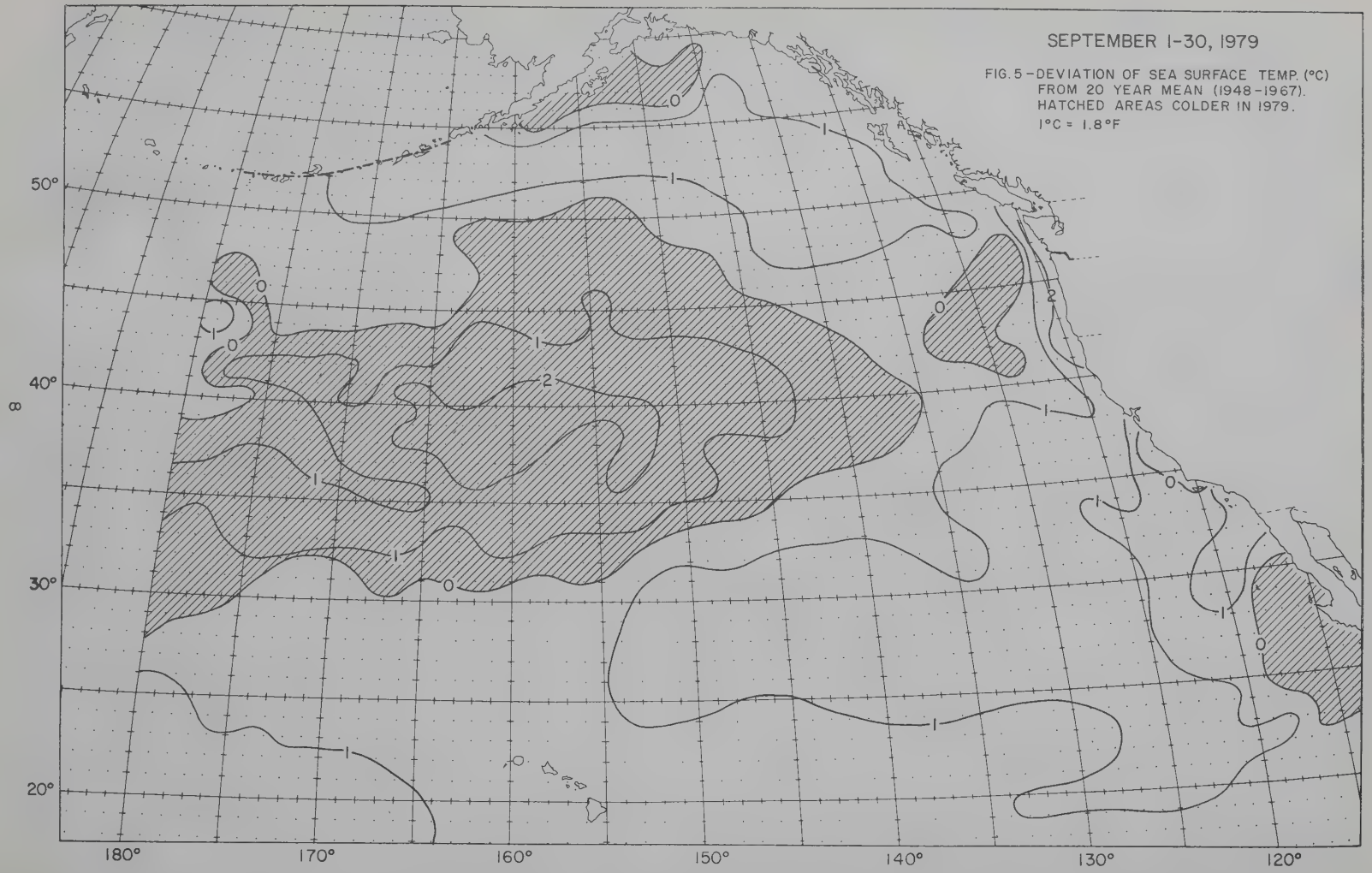
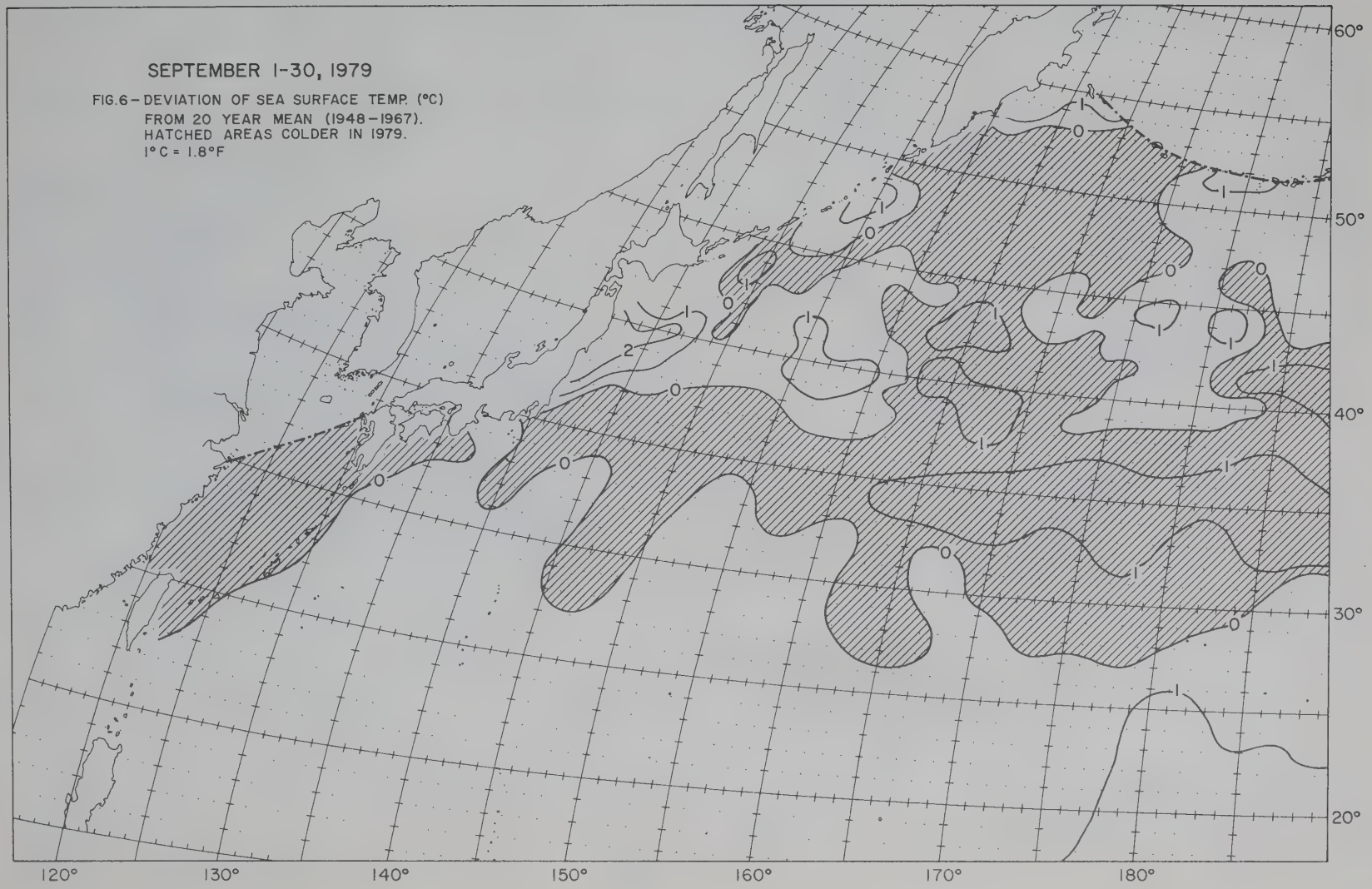
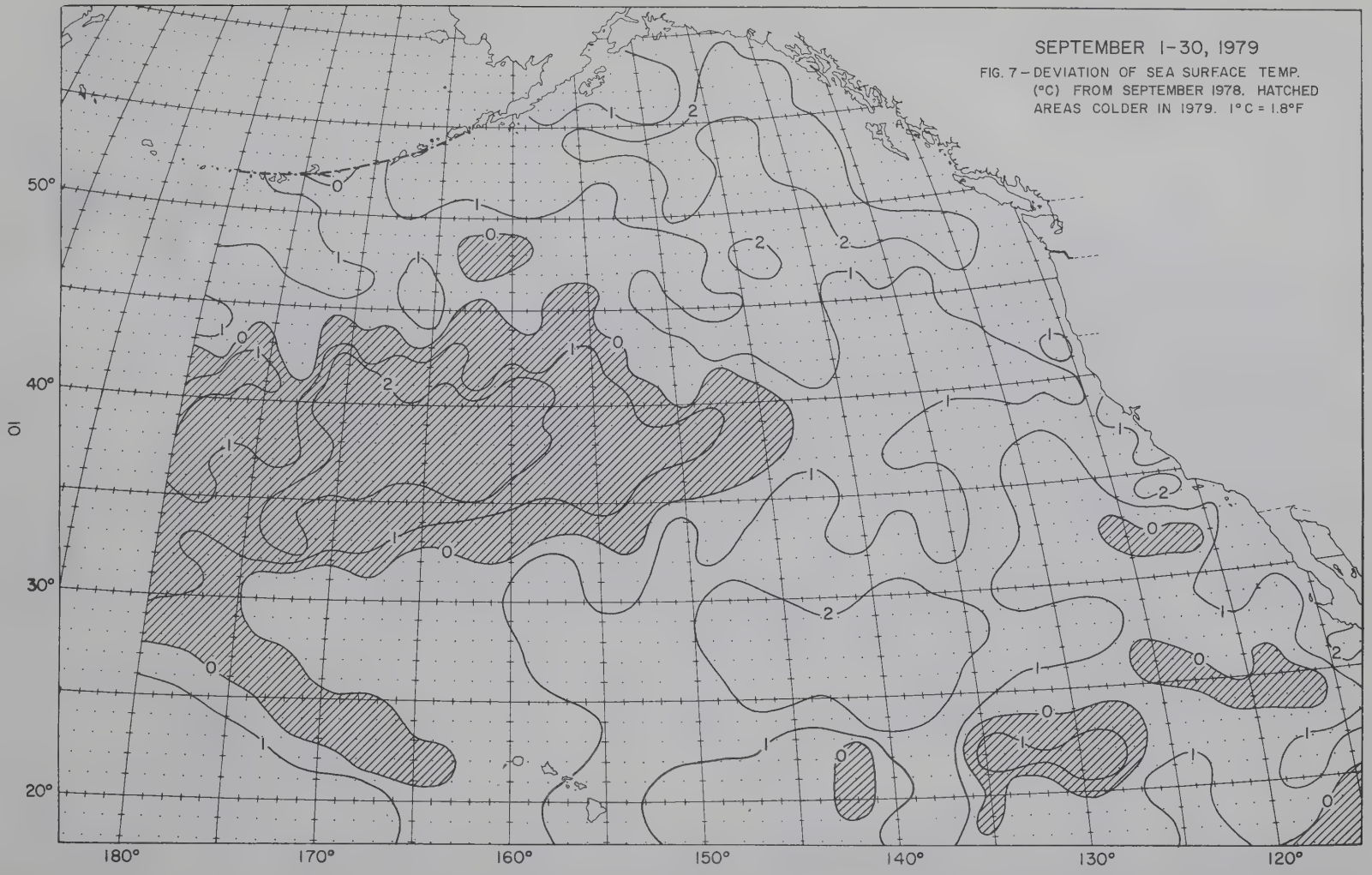
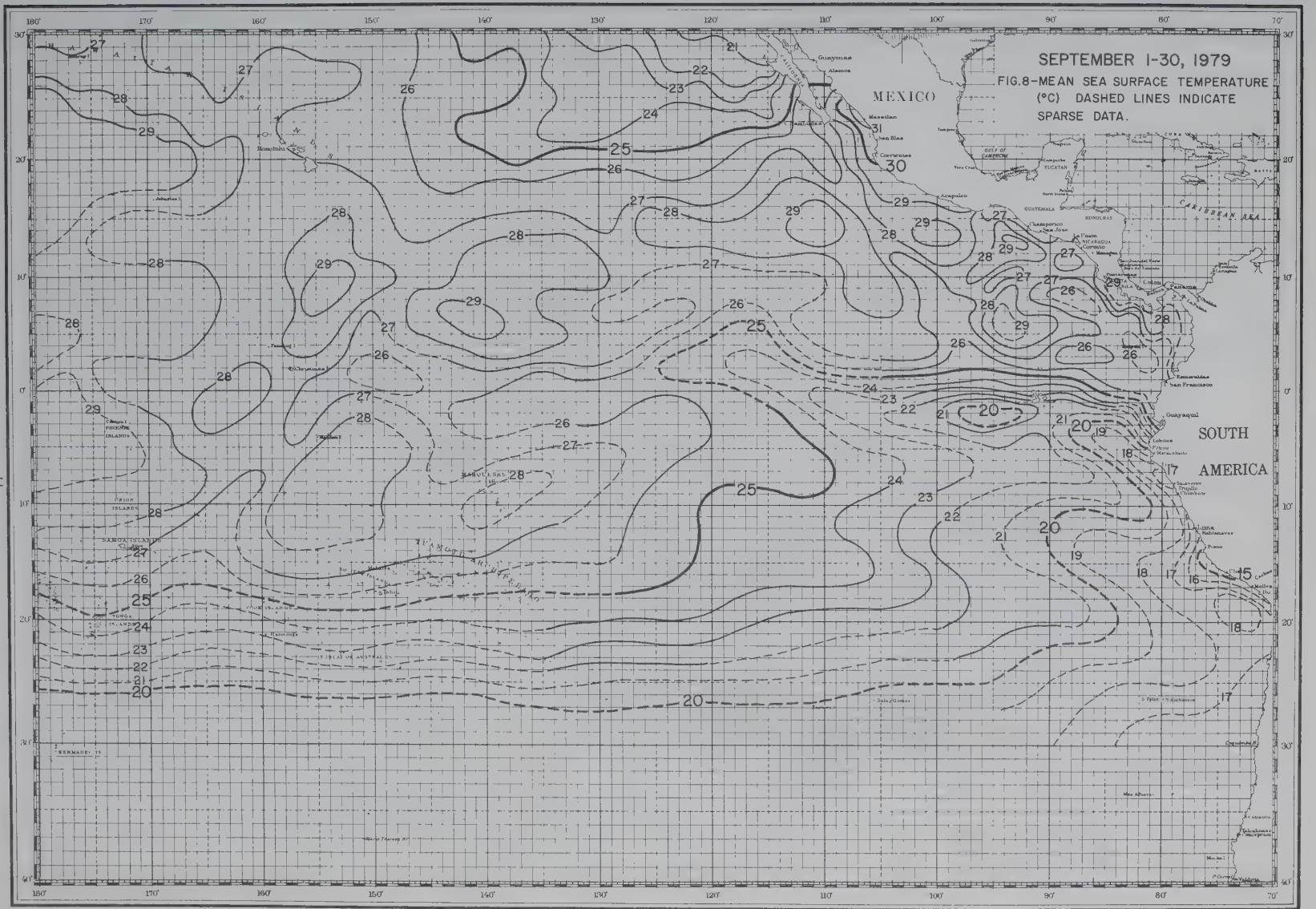
30
30


SEPTEMBER 1-30, 1979
FIG. 5 - DEVIATION OF SEA SURFACE TEMP. (°C) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1979.
1°C = 1.8°F
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


SEPTEMBER 1-30, 1979
FIG.6 – DEVIATION OF SEA SURFACE TEMP. (°C)
FROM 20 YEAR MEAN (1948–1967).
HATCHED AREAS COLDER IN 1979.
1°C = 1.8°F
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


SEPTEMBER 1-30, 1979
FIG. 7 – DEVIATION OF SEA SURFACE TEMP. (°C) FROM SEPTEMBER 1978. HATCHED AREAS COLDER IN 1979. 1°C = 1.8°F
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


SEPTEMBER 1-30, 1979
FIG.8-MEAN SEA SURFACE TEMPERATURE (°C) DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
Guaymas
Mazatlan
Acapulco
Panama
Guayaquil
Lima
Callao
San Francisco
Tamarindo
Champerico
Corrientes
Manzanillo
Salina Cruz
Puerto Angel
Salaverry
Trujillo
Chimbote
Talara
Paita
Tumbes
Huacho
Pisco
Ilo
Arica
Iquique
Antofagasta
Coquimbo
Valparaiso
Juan Fernandez Is.
Easter I.
Galapagos Is.
Cocos I.
Clipperton I.
Revillagigedo Is.
Marquesas Is.
Tuamotu Archipelago
Society Is.
Samoa Islands
Tonga Is.
Cook Is.
Kermadec Is.
Phoenix Islands
Line Islands
Tahiti
Rarotonga
Pitcairn I.
Juan Fernandez Is.
Sala y Gomez
Mas Afuera
Mas a Tierra
Alejandro Selkirk I.
Robinson Crusoe I.
Archipelago de Los Chonos
Taitao Pen.
Tres Montes Pen.
Madre de Dios I.
Diego Ramirez Is.
Isla de Los Estados
Staten I.
Falkland Is.
Gough I.
Tristan da Cunha
Nightingale I.
Inaccessible I.
Amsterdam I.
St. Paul I.
Islas Australes
Islas Crozet
Kerguelen Is.
Heard I.
McDonald Is.
Macquarie I.
Auckland Is.
Campbell I.
Antipodes Is.
Bounty Is.
Chatham Is.
Kermadec Is.
Norfolk I.
Lord Howe I.
Three Kings Is.
Minerva Reefs
Manihiki
Penrhyn I.
Nassau I.
Suwarrow I.
Palmerston I.
Niue I.
Aitutaki
Manuae
Mitiaro
Rarotonga
Mauke
Atiu
Manuae
Tongatapu
Eua I.
Ata I.
Niuafoou
Tafahi
Niuatoputapu
Wallis I.
Futuna I.
Rotuma I.
Fiji Is.
Suva
Lau Is.
Kandavu I.
Vanua Levu
Taveuni
Rabi I.
Banaba I.
Nauru I.
Ocean I.
Gilbert Is.
Tarawa
Makin I.
Marakei I.
Abaiang I.
Maiana I.
Butaritari I.
Apamama I.
Kuria I.
Aranuka I.
Nonouti I.
Tabiteuea
Onotoa I.
Arorae I.
Tamana I.
Beru I.
Nikunau I.
Abem

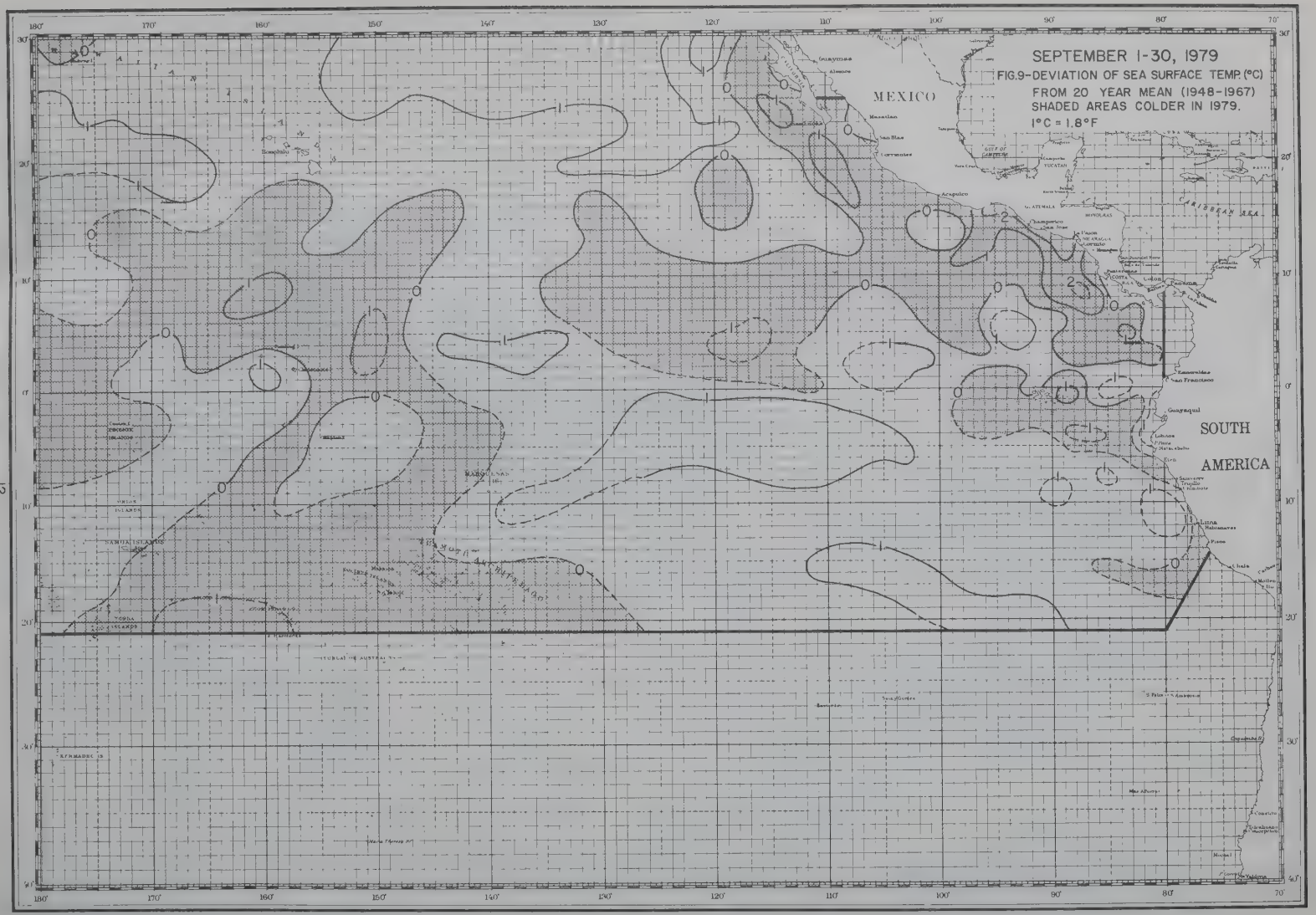

SEPTEMBER 1-30, 1979
FIG.9-DEVIATION OF SEA SURFACE TEMP.(°C)
FROM 20 YEAR MEAN (1948-1967)
SHADED AREAS COLDER IN 1979.
1°C = 1.8°F
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°
40°

FIGURE 10

SHIP MAUNAWILI

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- MAKAPUU PT, OAHU, HAWAII

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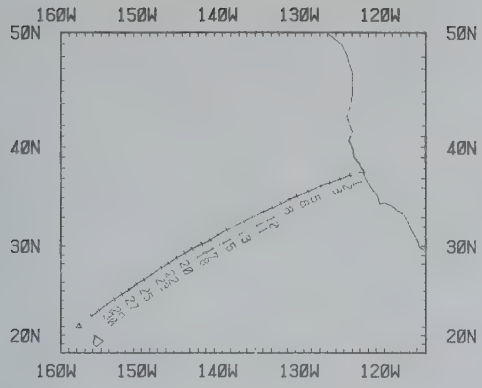

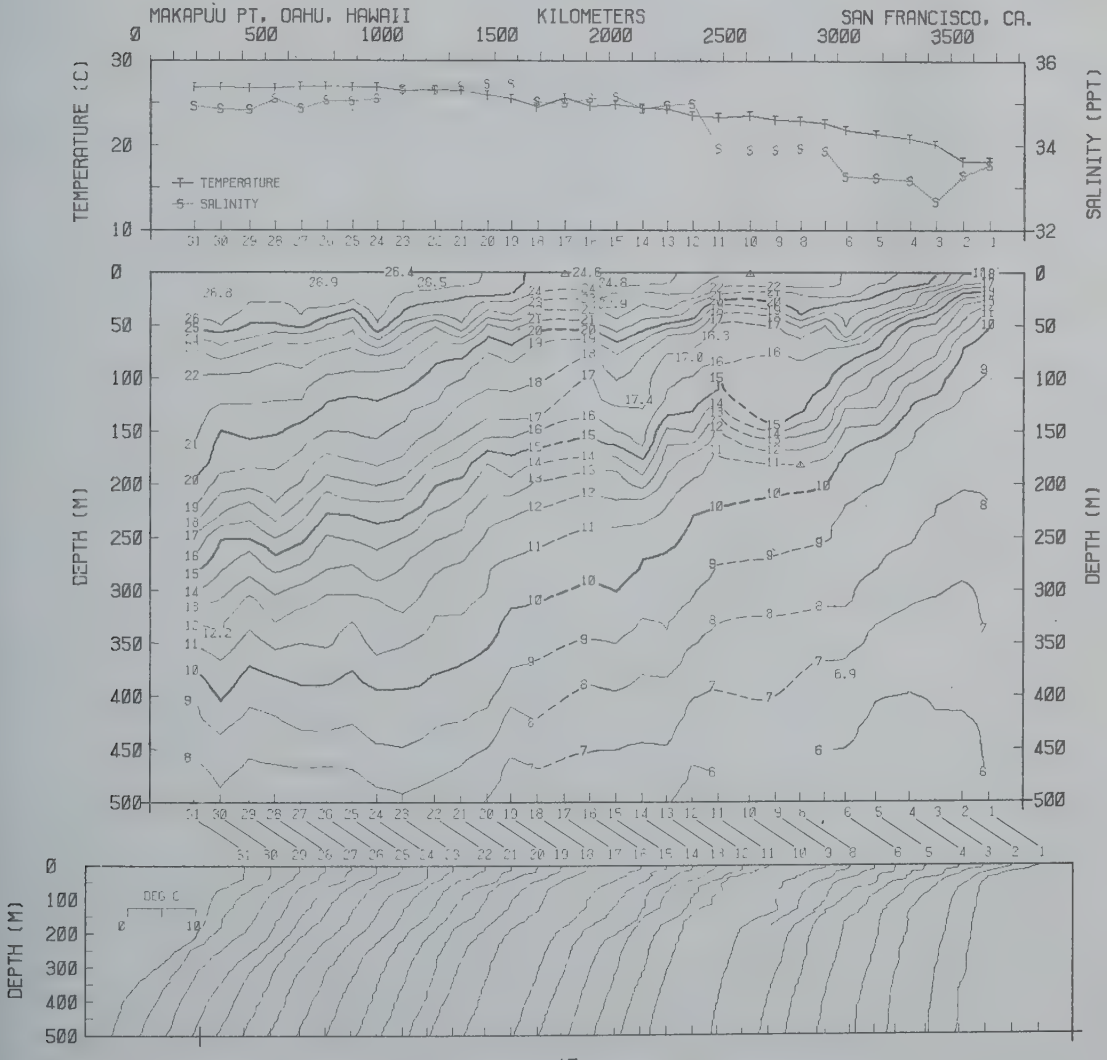

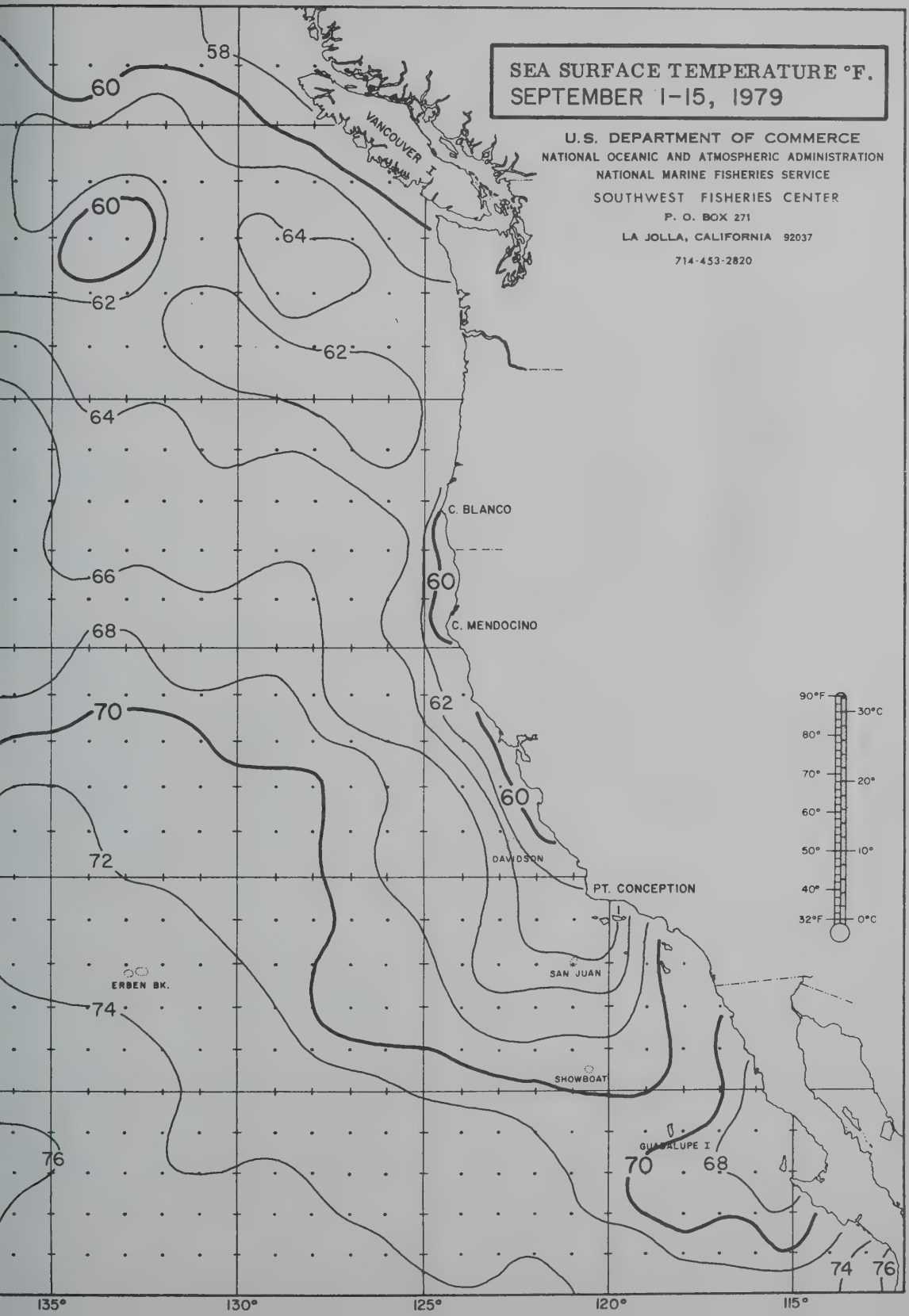
SEA SURFACE TEMPERATURE °F.
SEPTEMBER 1-15, 1979
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GUADALUPE I
58
60
64
62
66
68
70
72
74
76
90°F
80°
70°
60°
50°
40°
32°F
30°C
20°
10°
0°C
135°
130°
125°
120°
115°

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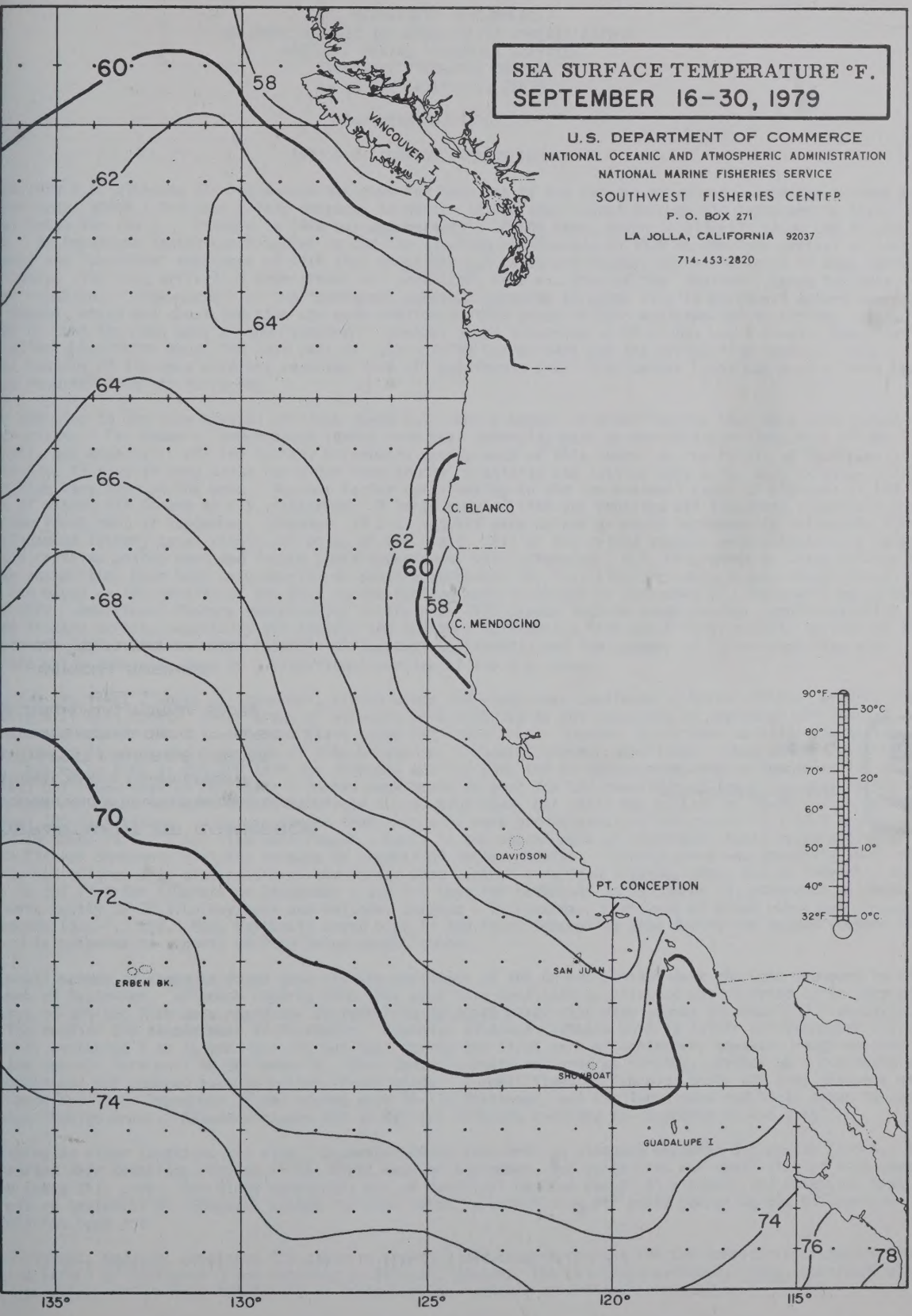

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La Jolla, California 92038

Bulletin No. 79-6

1979 U.S. ALBACORE SEASON POOR

The 1979 U.S. albacore fishing season has thus far been one of the poorest on record. Landings through mid-ember total about 2,400 tons. This compares to nearly 12,000 tons landed through mid-September in 1978. The onal total for the U.S. fishery in 1978 was approximately 18,500 tons, which is slightly below the 10-year age. An important factor contributing to the low landings of albacore in 1979 is the late arrival of both the thern" and "southern" substocks of fish that enter the U.S. albacore fishery north and south of Cape Mendocino, ectively. The late arrival of both groups was predicted; however, that of the "southern" group has been later was expected. Large numbers of the "northern" substock appeared to enter Pacific Northwest waters near the of August, which was about the time the main portion of this group of fish was expected to arrive. It is less as to when the main body of the "southern" substock began to arrive or if it has yet arrived. Some fish available beginning about the last part of July outside Cortez Bank and the surrounding regions. However, sub-cial numbers of albacore were not reported from off California until just before Labor Day when a large body of was reported from off Morro Bay.

In addition to the late arrival of fish, there have been a number of other factors that have contributed to poor season. For example, temperature fronts have been generally weak or non-existent along much of the U.S. Coast, but especially off the Pacific Northwest, during much of this summer as the result of low upwelling. equently, fishing in many areas has often been spotty, scattered and lasting only a few days in given locations ise fish have been on the move. Another factor contributing to the low seasonal catch of albacore is the ire of waters off Canada to U.S. fishermen. A large body of fish was reported off Vancouver Island and north ng the first part of September. However, 19 U.S. vessels were seized by early September for allegedly fishing ne Canadian fishery zone, within 200 miles of the coast. All of the seized vessels were subsequently released the captains posted bond and future court appearances were scheduled. U.S. Department of State talks with dian authorities have been unsuccessful in seeking agreement for U.S. albacore boats to operate in waters off da and based on the results of the most recent meeting held in Ottawa on September 12, there will be no agree-in 1979. Additional factors contributing to the poor 1979 season include rough weather conditions which have ered fishing effort, especially off central and northern California, fish not biting, notably earlier in the on in the Cortez Bank area and recently off central California, and low numbers of 12-15 pound fish off fornia which generally make up a significant portion of the U.S. catch.

During the first 2 weeks of September, strong winds and rough seas continued to hamper fishing efforts along ntire U.S. west coast. Large areas of albacore were reported at the beginning of September off central fornia and most of the U.S. albacore fleet moved into this area. However, boats were able to stay on the ng grounds for only short periods of time because of inclement weather conditions. When weather permitted ng, scores as high as 200-300 fish for jigboats and 2-4 tons for baitboats were made on September 1-2 off Bay, but rough seas on September 3 forced many boats to port for the remainder of the first week of the month. ls that stayed at sea were unable to circle due to high seas, but still had catches of 30-80 fish a day with ional 100 fish scores. Albacore landed from this area were predominantly 20-24 pounds (9.1-10.9 kg) and only 14-16 pound (6.4-7.3 kg) fish were caught. Early in the second week of September, boats began moving to the lson-Pioneer Seamounts vicinity because of reports of better fishing. Fishing there was generally 10-50 miles ore, but catches were also scattered and spotty when weather permitted fishing. Best scores from this location up to 200 fish for jigboats on September 8 and 4-5 tons for baitboats on September 11; otherwise, jigboat s were mostly 30-70 fish/day/boat and baitboat catches 1-1½ tons/day. Fish were of mixed sizes but averaged about pounds (5.5-7.3 kg). Many baitboats moved back to the Point Conception area during the second weekend of mber in response to reports of fish being caught there.

A small number of jigboats found good fishing northwest of the Columbia River near the Cobb Seamount in the week of September. Although reports from this area have been sketchy, fishing was reported to be very good cores of 300-500 fish were heard for September 13 by 20-25 boats with high scores of about 200 fish/day/boat g the rest of the second week in September. Canadian albacore jigboats working mainly off Vancouver Island atches averaging 1 to 1½ tons per day per boat during the first part of September; however, rough weather d the vessels into port on September 9. When Canadian boats returned to fishing, catches were scattered as conditions had changed because of the strong winds. A small fleet of Canadian boats did find albacore near ellwood Knolls on September 11 and scores were 75-110 fish/boat, but fishing slowed and boats began to search etter fishing areas. Albacore caught off of British Columbia averaged 15-18 pounds (6.8-8.2 kg).

Fishing in other locations was slow. Scores of 30-50 fish/boat on albacore weighing 8-9 pounds (3.6-4.1 kg) reported near Brookings, Oregon in the first week of September, but rough seas and small size of fish caused to leave this area. San Diego sportboats out of Municipal Landing caught 92 albacore off Ensenada, Baja fornia on September 9. However, except for this catch, sportsfishing for boats operating out of southern fornia has been poor.

The jigboat, Seawind, completed its albacore scouting and tagging charter for the American Fishermen's Research dation (AFRF) on September 3 and returned to Astoria, Oregon. The chartered baitboat, Linda, continued albacore ng operations off central California in September when weather conditions permitted.

A very deep low pressure system developed south of the Aleutian Islands during the first half of Septemb and slowly drifted eastward into the Gulf of Alaska. This resulted in high surface atmospheric pressures over large coastal area north of Cape Blanco, and low pressure persisting along the coasts of central and southern California. Surface winds were generally light over southern California but over the coastal areas, notably between Cape Mendocino to south of Monterey Bay, high surface winds extended more than 200 miles out from the coast.

Sea surface temperatures (SST's) along most of the west coast north of Monterey Bay were 2° to 4°F (1.1° 2.2°C) above normal. Sea surface temperatures nearshore from Cape Blanco to Morro Bay actually increased from 57°F (13.9°C) to 60°F (15.6°C) during the last 15-20 days (see chart) due to the lack of the usual amount of coastal upwelling and wind mixing. As a result, there has been no well-defined temperature edges for the past 2 months along most of the U.S. west coast. The only areas with some horizontal SST gradients developed durin the second week of September in a triangular area between Point Conception and the Davidson and San Juan Seamo There was also some intensification of the ocean frontal boundary from Guadalupe Island to Cedros Island. Str surface winds associated with the deep low pressure system in the western part of the Gulf of Alaska caused mi of the surface layers and reduced SST's 2° to 4°F (1.1° to 2.2°C) from about Coos Bay to Willapa Bay between 1 and 133°W. Elsewhere north of 30°N and west of 123°W, SST's were 2° to 4°F (1.1° to 2.2°C) above normal.

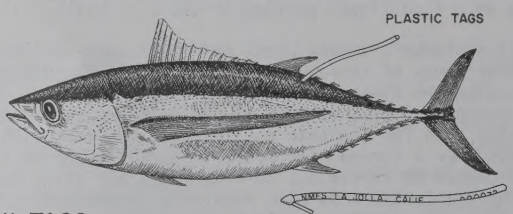
The National Weather Service Long Range Prediction Group projects that from mid-September to mid-October most weather fronts will continue to cross the coast of North America north of 50°N. The eastern Pacific High pressure system will continue to be a dominant feature over British Columbia, Washington and Oregon. This out suggests that even though some cooling of coastal waters should occur during the last 10 days of September as eastern Pacific High moves southeast, SST's will continue to be 1° to 2°F (0.6°-1.1°C) above normal during the remainder of September from Vancouver Island to Monterey Bay. Because of the persistence of the high pressure system north of 40°N and low pressure along the coast of California south of 40°N, the usual coastal upwelling has been absent for much of the summer, and this condition is expected to continue during the last half of Sep in the coastal region north of Monterey Bay. From Point Conception to Monterey Bay, coastal upwelling will probably intensify and stronger frontal boundaries will develop between Davidson and San Juan Seamounts.

September 18, 1979

Staff, Albacore Fisheries Progr
R. Michael Laurs, Leader

$ REWARD $

FOR ALBACORE TUNA TAGS



YELLOW TAGS

THE NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 2.00 FOR EACH YELLOW TAG RECOVERED. (NO NEED TO RETURN FISH)

RECORD:
- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

FORWARD TO NMFS ADDRESS ON TAG

RED TAGS

THE NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 50.00 FOR EACH RED TAG & FISH RETURNED. (FISH WITH TAG INTACT MUST BE RETURNED)

RECORD:
- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

NOTIFY NMFS P.O. BOX 271, LA JOLLA, CA. TEL. (714) 453-2820

THE AMERICAN FISHERMEN'S RESEARCH FOUNDATION WILL AWARD CASH PRIZES FOR YELLOW & RED TAG NUMBERS DRAWN IN AN ANNUAL LOTTERY.